

Wild in the Woods

Wildlife by Ear

by Carol A. Heiser
illustrations by Spike Knuth

Golden flecks of light peek through the trees of forests and wetlands on a clear, vernal dawn, while glimmers of life also begin to arouse and become audible, one by one. As the land gradually awakens to the sun's caress, our first hints of the impending day-long chorus are the harmonious calls of myriad birds and waterfowl. They each declare their presence or proclaim their territory, like so many "Whos" in Dr. Seuss' "Whoville," shouting "We are here, we are here, we are here!" Meanwhile, we become progressively aware of the steady hum of insect life, underfoot and overhead, revealing its pervasiveness with chirping, buzzing, and droning. Frogs, too, supply croaks and trills to round out nature's symphony.

What is the purpose of all this noise? We might liken it to an endless series of TV commercials, a kind of broadcast that declares an animal's presence and its role in the grand scheme of things. Birds, mammals, amphib-

ians, and other wildlife rely on sound for a variety of reasons: to find a mate; to defend a breeding territory or food source; to encourage young to leave the nest; to communicate with each other; to warn others of a potential predator; or to scare off intruders. Whether grunt, squeak, or chirp, the sounds of nature are built in for survival.

Learning to Sing

Birdwatchers are quick to tell you that the majority of birds that make it onto their lists are those identified by ear; many enthusiasts have listened for hours to tapes of bird songs, trying to learn the nuances between the calls of one warbler and another. How do birds learn these songs themselves? The same way humans learn speech: by trial and error, and with the example of a parent and other adults.





Typically, a male parent bird provides the song “template,” since it is male birds that do most of the singing (females can vocalize, but they usually reserve their calls for response to males or young). Nestlings begin song practice within a few weeks of hatching. They mimic the parent bird and gradually become more vocal, honing their individual version of the song’s structure—just as a human baby begins the process with incoherent babbling that is eventually replaced by recognizable words and sentences. Hearing, memorization, and recall are all critical to the process. The nestling’s brain first “records” the song; as the bird matures and practices vocalizing, it listens to the quality of its own notes and compares them to the memory in the brain, eventually producing the necessary notes in the correct sequences.

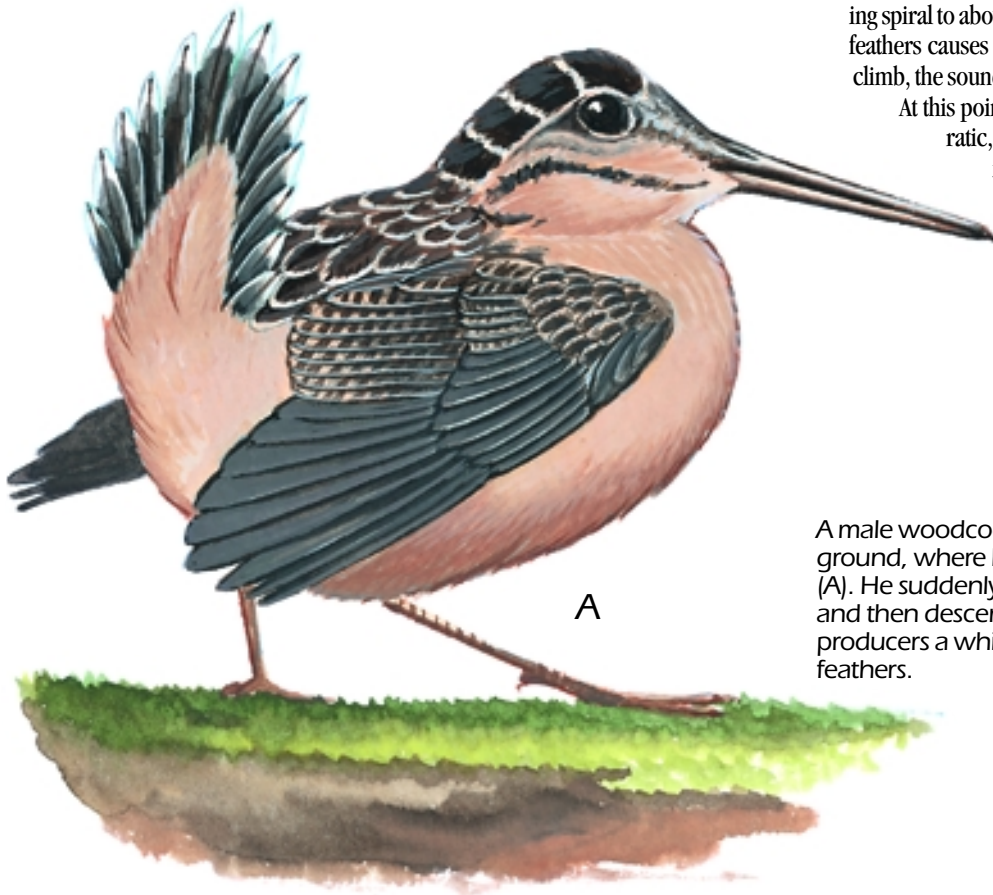
Scientists record bird songs and reproduce them visually in a *sonogram*, a strip of white paper with numerous black marks which resemble the strokes of an artist’s

A male mockingbird (right) sings throughout spring and summer, but is most vocal during courtship from April to June. A female sings very little and is usually heard only in the fall or early winter. Crickets (above) and katydids (left) produce calls at night.





B



A

brush or a calligrapher's pen. Each mark is a representation of one note of the song, and several marks in a pattern can reveal a song "phrase." It is the particular combination of these marks and phrases that provide the unique "signature" for a given species of bird and that enable scientists to compare and contrast songs between species.

Other Noisemakers

Not all wildlife relies on vocalization to get a message across. Mammals, for example, will make warning sounds when the occasion arises, such as the snort of a white-tailed deer, or the slap of a beaver's tail on water.

One of the more peculiar examples of sound in nature occurs during the flight display of the common snipe and the American woodcock, two game birds found in damp, brushy habitats with open fields nearby. Like the mourning dove, whose wings produce a twittering sound upon takeoff, the wings of snipe and woodcock can create sound during ritualistic courtship displays. During the day or night, a male snipe performs a circular flight high in the air, and then without warning takes a steep dive straight down to the ground at high speed. Air rushing past its outspread tail feathers produces a low, whistling sound. A male woodcock, which displays at night, starts its flight by leaping from the ground and rising in an ever-widening spiral to about 300 feet, and the movement of air over its flight feathers causes a high twitter. As the bird circles at the top of its climb, the sound is intensified to bursts of whistling or twittering.

At this point, the woodcock plunges to the ground with erratic, zigzag movements that create a variety of chirping sounds, and he lands near the female to begin again.

Of all creatures in the animal kingdom, however, insects are perhaps the most strident, relying on specific physiological adaptations to make noise. Many insect species are heard at night, such as the

A male woodcock attracts a female to his singing ground, where he begins his courtship with strutting (A). He suddenly flies up (B) making a peenting call, and then descends rapidly to the ground, which produces a whistling sound through the flight feathers.

katydid, a tree dweller whose name suggests its call. Crickets—like the snowy tree cricket found in shrubs and tall grasses, or the more familiar black “house” cricket—chirp with a frequency that reflects the ambient temperature: count the number of chirps in 15 seconds, add 40, and the result is the temperature in Fahrenheit. As with so many other species, it is the males that do the calling. A cricket’s front wings are adapted for sound-making, with a “scraper” on one wing that is rubbed along a ridge or “file” on the other. Male cicadas, in contrast, advertise their availability to females during the day. As the temperature increases throughout the day, the cicada’s “call” becomes louder and more intense, rising to a crescendo that we associate with the long, hot days of summer.

Rehearsing a Repertoire

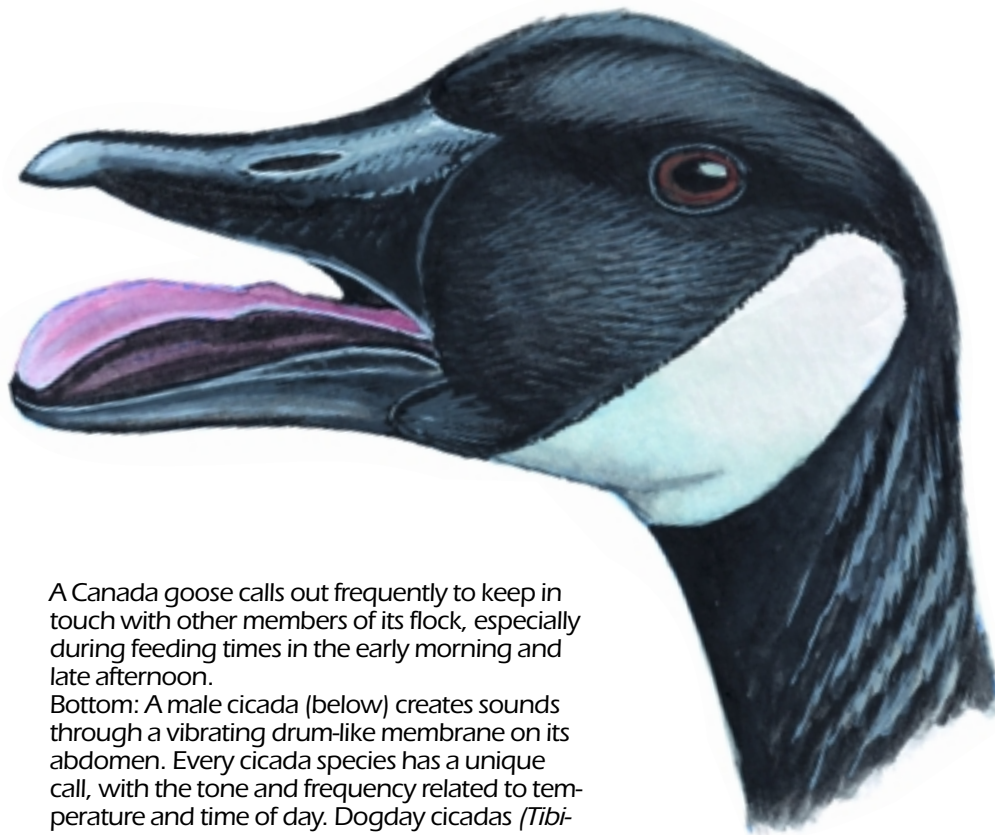
The complexity of bird song can be astounding. For example, a male northern mockingbird can sing hundreds of different songs, some of which may be sung only once and never again, while others are sung year after year. This species, along with the thrasher and catbird, is a member of the *Mimidae* family, well known for its seemingly faultless mimicry. A mockingbird primarily imitates other bird species; but it is also adept at reproducing extraneous noises in the neighborhood, like dogs, sirens, and beepers.

Why birds mimic is not clear, but the role of song in courtship by all species cannot be understated. It accounts for the fact that the most

noticeable birdsongs occur during the beginning of breeding season, in April and May. Males with the greatest repertoires tend to have the most advantageous territories. In some species, such as the song sparrow, females prefer males with larger repertoires, thus improving the odds that these pairs will mate successfully and pass on the repertoire trait. Singing a personalized song while defending a territory may also help to reduce the number of actual

confrontations with other birds, which in turn saves energy for reproduction. Another adaptive advantage is the ability of different bird species to imitate each other’s alarm calls, a strategy that can provide a collective benefit to, say, a cluster of songbirds about to be attacked by a hawk.

Birds not only sing a characteristic song for their species, they sing in dialects as well. A blue



A Canada goose calls out frequently to keep in touch with other members of its flock, especially during feeding times in the early morning and late afternoon.

Bottom: A male cicada (below) creates sounds through a vibrating drum-like membrane on its abdomen. Every cicada species has a unique call, with the tone and frequency related to temperature and time of day. Dogday cicadas (*Tibicen*), which are lighter in color and have green wing margins, sing and fly during the summer.



Virginia
Naturally

jay on the eastern shore can sound quite different than a blue jay in the Roanoke area. Local dialects are maintained because young birds, which disperse to new areas, usually adapt to their new environment, acquiring the associated dialect.

Perhaps the most vociferous birds are waterfowl, such as snow geese and Canada geese, which must rely on high-volume calling to reach birds in the distance. Geese use an extensive vocabulary and call almost constantly, making different calls when on the ground than when on the wing. Barks and yelps define long-distance calling, which can carry for over a mile. Geese feeding in flocks on the ground make contented, murmuring guttural notes. Because geese produce such a variety of sounds, hunters have developed manually- or mouth-operated calls that are tailored to match the particular type, volume, and intensity of calls that the birds are using at a given time. Such calls help lure the birds to decoys and improve hunting success.

Breeding Calls

As we reported in an earlier article ("Calling All Frogs," May 2001 *Virginia Wildlife*), frogs and toads also excel at vocalizations. Males almost exclusively do the calling, and they usually call near a still body of water during breeding

The mating call of a male northern spring peeper is a high piping whistle repeated about once every second, which sounds like one long trill to the human ear. Choral groups of peepers can be heard throughout Virginia wherever trees and shrubs are near standing water.

season. The intensity and frequency of their calls is related to the temperature and the weather, and calls vary depending on the time of year, geographic location, and habitat characteristics. Since these animals hibernate between October and January, you will only hear them between late winter and mid-summer. The best time to listen for frogs and toads is on a warm night just after a rain, when the humidity is high and there is no wind. Some species are easier to identify than others because their calls are very distinct, such as the spring peeper (a repetitive "peep"), bullfrog (a deep foghorn, "jug-o-rum"), American toad (a high pitched "wheeeee"), and the gray treefrog (a trilled "brrrrrrr"). You may hear only one or two frogs during the day; but upon returning to the same site in the evening (optimally 30 minutes after sunset), you may hear a whole chorus of competitors.

Learning More...

Look in your public library for the Peterson field guide series of bird calls on tape or CD, or for frogs on "Voices of the Night" by Cornell Laboratory. Your local bookstore may also carry these recordings, as well as the *Birdsong Identifier* from For the Birds, a kit that contains electronic cards which produce bird calls when inserted into a hand-held song player. To learn more about insects, check out *A Guide to Observing Insects*, by Donald Stokes, c. 1998, Little-Brown Publishing.

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